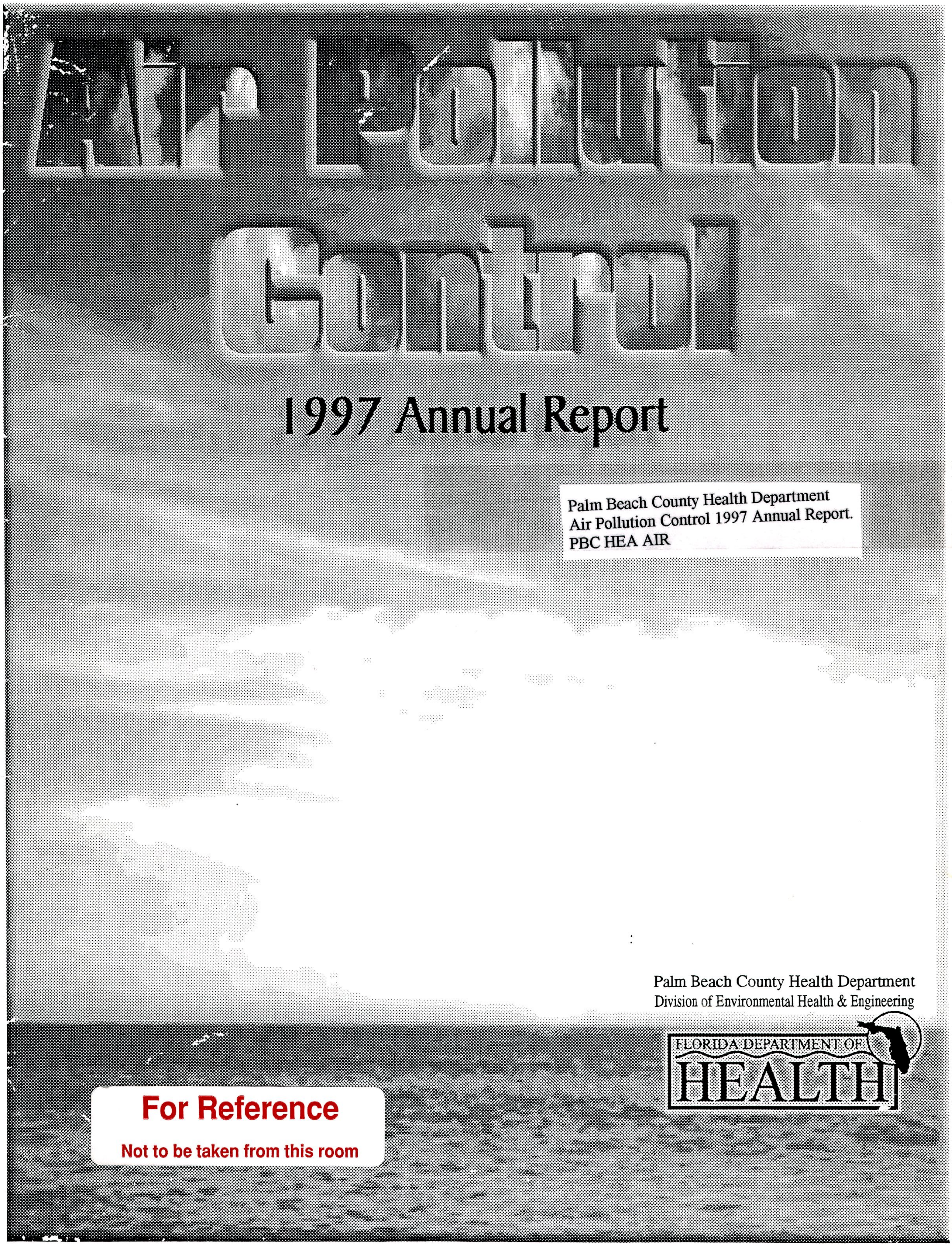

Air Pollution Control

1997 Annual Report

Palm Beach County Health Department
Air Pollution Control 1997 Annual Report.
PBC HEA AIR

Palm Beach County Health Department
Division of Environmental Health & Engineering

FLORIDA DEPARTMENT OF
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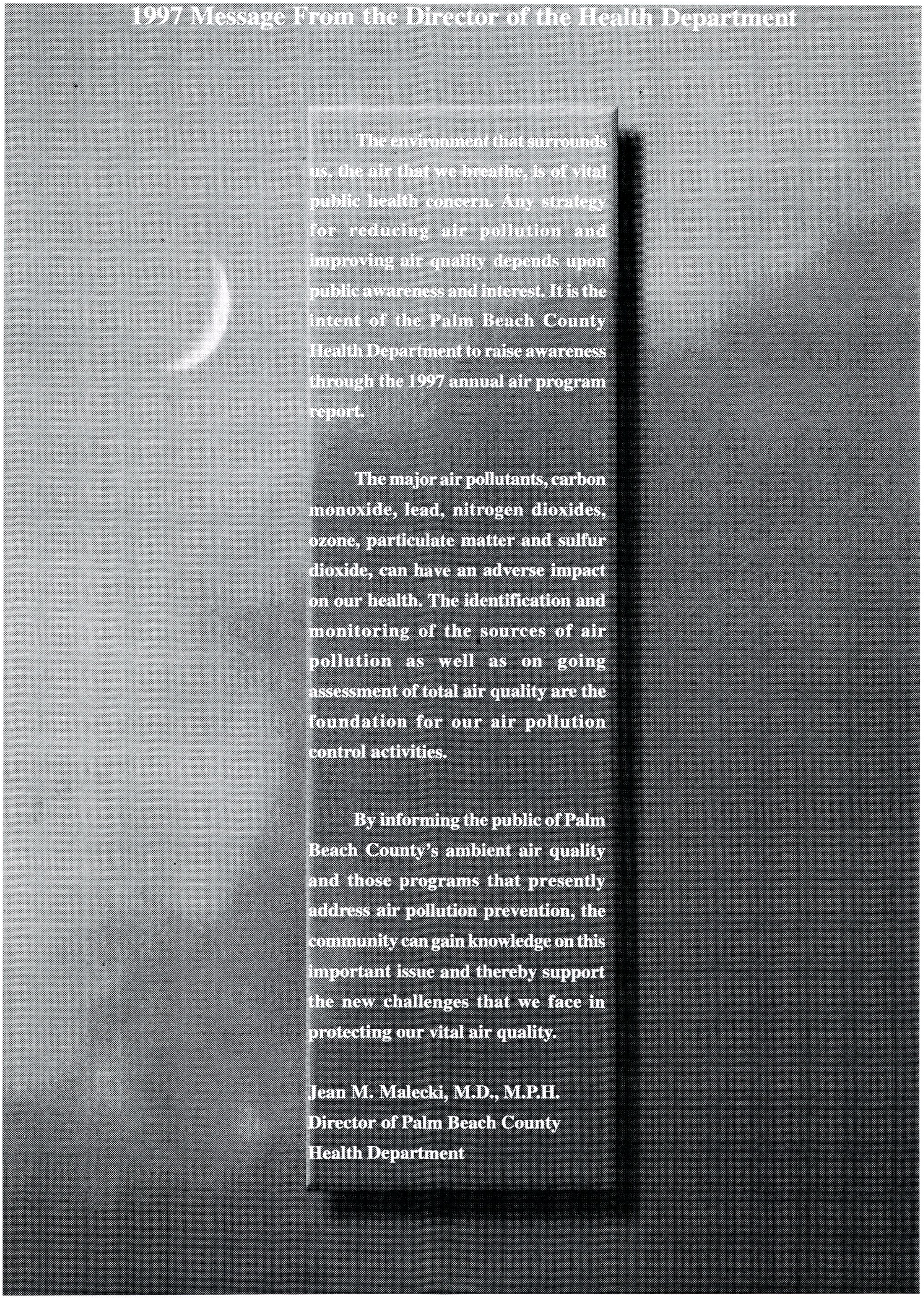
1997 Message From the Director of the Health Department



The environment that surrounds us, the air that we breathe, is of vital public health concern. Any strategy for reducing air pollution and improving air quality depends upon public awareness and interest. It is the intent of the Palm Beach County Health Department to raise awareness through the 1997 annual air program report.

The major air pollutants, carbon monoxide, lead, nitrogen dioxides, ozone, particulate matter and sulfur dioxide, can have an adverse impact on our health. The identification and monitoring of the sources of air pollution as well as on going assessment of total air quality are the foundation for our air pollution control activities.

By informing the public of Palm Beach County's ambient air quality and those programs that presently address air pollution prevention, the community can gain knowledge on this important issue and thereby support the new challenges that we face in protecting our vital air quality.

Jean M. Malecki, M.D., M.P.H.
Director of Palm Beach County
Health Department

Message From The Director of Environmental Health & Engineering

We are pleased to present the 1997 Air Pollution Control Program Annual Report. This report is intended to provide an overview of current air quality in Palm Beach County, and to summarize the activities and accomplishments. This year was earmarked by a very significant event. In July, 1997, the U.S Environmental Protection Agency adopted major revisions to the National Ambient Air Quality Standards (NAAQS) for two pollutants. These revisions were made in response to a significant body of scientific evidence supporting a hypothesis that previous air quality standards were not protective of public health as required by the Clean Air Act. Accordingly, the ozone standard was changed to a lower concentration but averaged over eight hours instead of one hour. Also, a new annual and daily standard was adopted for fine particulate matter, which is made up of particles with diameters less than 2.5 micrometers (PM2.5). These particles, being smaller, have a greater ability to penetrate and deposit in the lower respiratory system, and therefore, are more of a health concern. We are hopeful that Palm Beach County will be in compliance with the new standards; however, the official attainment determination will not be made until after the year 2000. Beyond 2000, the situation is more uncertain because as Palm Beach County continues to grow, so do the major sources that cause air pollution such as automobiles and electrical generation plants. In order to maintain good air quality, it is important to retain existing control measures that are proven to be effective, and to support new efforts, locally and nationally, to control air pollution from all sources.

Future air pollution control requirements will continue to add to the complexity of operating in today's society. It is for this reason that we focus on being service orientated. Our function is not just to regulate, but to assist and educate the public and businesses in meeting these new requirements. Furthermore, we recognize that air quality benefits can also be achieved through voluntary efforts. For this reason we remain strongly committed to our Pollution Prevention (P2) program which emphasizes the employment of cost effective processes and alternative methods that reduce the amount of pollution before it is generated as opposed to dealing with it after it is formed. The success of P2 depends on the cooperation and commitment of the stakeholders to reduce pollution. It is but one example of the changing attitudes necessary to address the future challenges of reducing pollution further for the benefit of public health.

Frank J. Gargiulo, P.E., R.S.
Director
Environmental Health & Engineering

TABLE OF CONTENTS

Message from the Director of the Health Department ---------- 1

Message from the Director of Environmental Health & Engineering ---------- 2

I. Introduction ---------- 4

Characteristics of Palm Beach County ---------- 4

Organization and Goals ---------- 5

II. Major Air Pollutants & Health Effects ---------- 6

III. Air Quality Assessment ---------- 7

Meteorology ---------- 7

Ambient Air Monitoring ---------- 7

Air Quality Index ---------- 8

Pollen and Mold Spore Count ---------- 9

IV. Soures of Air Pollution ---------- 9

Emissions Inventory ---------- 11

V. Air Pollution Control Activities ---------- 12

Permitting and Licensing ---------- 12

Inspection and Compliance ---------- 13

Enforcement ---------- 13

Mobile Source Program ---------- 13

Motor Vehicle Inspection Program (MVIP) ---------- 13

Protecting the Upper Level Ozone Layer ---------- 13

Stage II Gasoline Vapor Recovery Program Update ---------- 14

Asbestos ---------- 14

Open Burning ---------- 14

Indoor Air Quality ---------- 14

Marine Engine Improvements ---------- 14

Pollution Prevention (P2) Activities 1997 ---------- 15

VI. New Developments ---------- 16

Title V Update ---------- 17

Special Air Quality Study ---------- 17

Global Warming and Climate Change Update ---------- 18

VII. Abbreviations ---------- 19

VIII. Credits ---------- 20

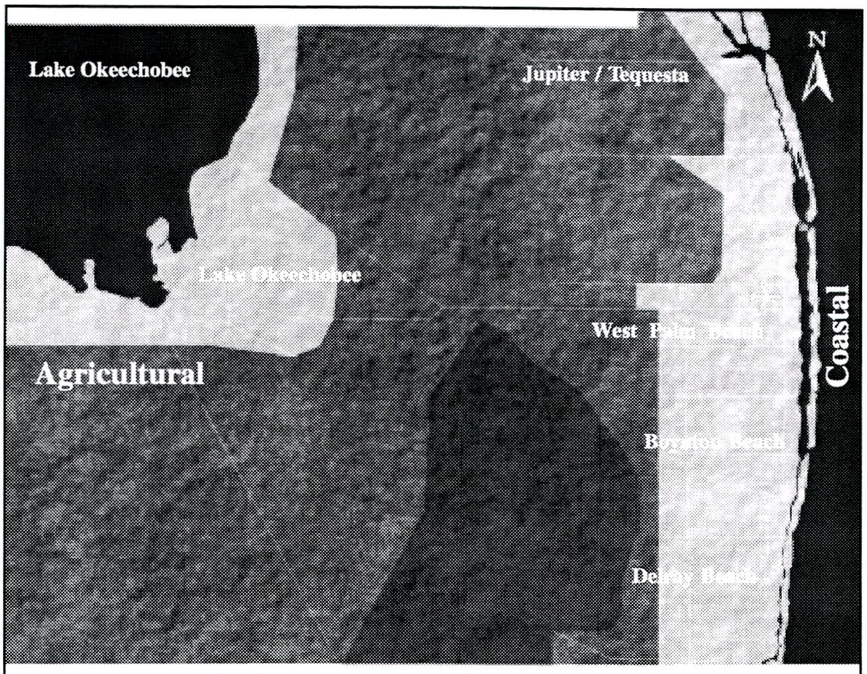
I. INTRODUCTION

Air is an essential natural resource, one that we cannot afford to take for granted. Many everyday activities contribute to pollution of this vital resource. Clean air is important. A decline in overall air quality can damage health and property, affect business, recreation, and tourism. Since each of us contributes in some manner to air pollution, we must all take responsibility for seeking a solution.

To address this problem, the Palm Beach County Health Department has implemented an extensive air pollution control program. Working closely with other agencies and organizations, the Health Department is striving to protect and maintain the good air quality Palm Beach County residents now enjoy.

Characteristics of Palm Beach County

Palm Beach County is located along the southeast coast of Florida, and is part of what is generally called the "Florida Gold Coast." Containing about 2,000 square miles, Palm Beach County is geographically separated into two regions. One region is a highly urbanized coastal strip, stretching approximately forty-five miles north to south, from Tequesta to Boca Raton. The other region is agricultural, located in the western portion of Palm Beach County (the Glades Area).



Many of Palm Beach County's 38 municipalities are located along the densely populated coastal region.

The estimated population of Palm Beach County in 1997 was 1,003,798. About 97% of the population is located along the coast, reaching inland about 15 miles. Rapid development in recent years has resulted in the growth of several municipalities within this coastal strip. The major cities with populations over 50,000 are West Palm Beach, Boca Raton, Delray Beach, and Boynton Beach.

The area around Lake Okeechobee contains almost all of the remaining 3% of the county's population. Municipalities in the Glades Area include Belle Glade, Pahokee, and South Bay. The economy of this area is agricultural, based primarily on sugar cane and winter vegetables.

Tourism and related businesses continue to be the dominant economic factors in the urban area. Tourism has kept pace with an increasing population. Other major industries in the area include building construction and related fields, agriculture, aircraft testing, computer and electronics manufacturing, concrete, asphalt, and service industries.

The complexity of the problems of air pollution control are related to the widespread growth in Palm Beach County. Advances in environmental protection activities, which are being carried out by this program, have been utilized in order to keep abreast of air pollution problems. These activities are characteristic of urban areas across the nation.

Organization and Goals

The air pollution control program is organized under the Palm Beach County Health Department's Division of Environmental Health and Engineering. Established in 1965, it is one of the oldest and most experienced programs in the state. Operating on behalf of Palm Beach County, the Health Department's program is recognized by the Florida Department of Environmental Protection as an approved local air program. The program is supported by general revenue funds, license fees, a federal grant, and motor vehicle registration fees.

The goals and objectives of the Health Department's air program are to:

- **maintain National Ambient Air Quality Standards.**
- **protect public health, safety and welfare.**
- **promote air quality preservation and the conservation of our natural resource.**
- **seek alternative's to encourge voluntary pollution prevention.**

To accomplish these goals, the air pollution control program is organized into two general areas: air pollution control and air quality assessment. Given sufficient resources, adequate regulations, and most importantly, the support of the public, these goals and objectives can be achieved.

Preserving the County's Air quality will allow residents and visitors to enjoy the highest "quality of life" as dipicted by this senic photo of the intracoastal waterway on a "crystal clear" day.

II. Major Air Pollutants & Health Effects

A number of air pollutants can cause damage to our health. The Clean Air Act provides for the establishment of National Ambient Air Quality Standards (NAAQS) for a select list of air pollutants. These "criteria" air pollutants are the most prevalent and have the greatest overall adverse impacts on health. The standards are designed to protect public health with a margin of safety, and are based on the best available scientific evidence. Table 2.1 lists the current NAAQS for the six criteria air pollutants. Table 2.2 provides a desscription of each pollutant and associated health effects. Also, new NAAQS was promulgated for Ozone and Particulate Matter. A discussion of these standards is provided under Section VI, New Developments in this report.

Table 2.1 Federal and State Ambient Air Quality Standards

POLLUTANT	UNITS	FEDERAL Primary	FEDERAL Secondary	STATE
1.Particulate Matter (PM)				
Inhalable PM 10				
Annual Arithmetic Mean	ug/m3	50	-	same
Maximum 24 Hour Value	ug/m3	150	-	same
FINE (PM2.5)				
Annual Arithmetic Mean	ug/m3	15	-	same
Maximum 24 Hour Value	ug/m3	65	-	same
2.Sulfur Dioxides				
Annual Arithmetic Mean	PPM	0.03	-	0.02
Maximum 24 Hour Value	PPM	0.14	-	0.10
Maximum 3 Hour Value	PPM	0.50	-	same
3.Carbon Monoxide				
Maximum 8 Hour Value	PPM	9	same	same
Maximum 1 Hour Value	PPM	35	same	same
4.Ozone				
Maximum 8 Hour Value	PPM	0.08	same	same
5.Nitrogen Dioxide				
Annual Arithmetic Mean	PPM	0.05	same	same
6.Lead				
3 Month Average	ug/m3	1.5	same	same

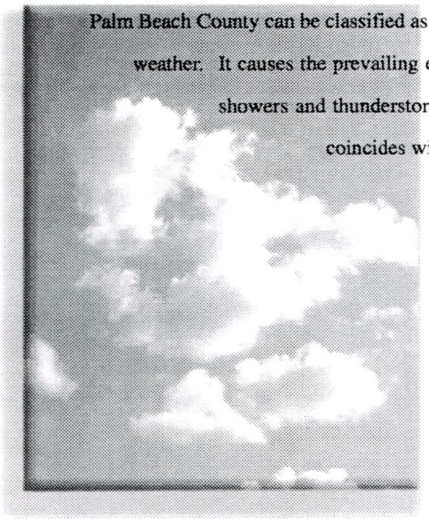
Criteria Pollutants

Table 2.2

POLLUTANT	DESCRIPTION	EFFECTS	SOURCES
PARTICULATE MATTER PM 10 and PM 2.5	Particulate matter is liquid or solid particles suspended in the atmosphere. This includes soil, sand, soot and mold spores. PM2.5 is made up of smaller particles emitted primarily from combustion sources or formed from chemical reactions in the air.	Particulate matter can affect those who suffer from cardiopulmonary diseases such as asthma. Fine particles (PM2.5) are more of a health concern as they can penetrate deeply into the lungs. High levels of PM2.5 have been associated with increased illnesses and mortality.	Factories, power plants, motor vehicles, construction activity, open burning, wind blown dust.
OZONE (ground level)	Ozone (03) is produced by a photo chemical reaction between oxygen(02), oxides of nitrogen (NO2) and volatile organic compounds (VOCs).	Ozone is an irritant to the mucous membranes of the respiratory system. Elevated levels can effect breathing. Individuals with pre-existing respiratory problems or engaged in outdoor activities are particularly at risk, especially children.	VOCs from motor vehicles and evaporative emissions from solvents used in paints, cleaners, printing and other processes. For N0x, see below for N02.
NITROGEN DIOXIDE	Nitrogen dioxide (NO2) is a reddish-brown gas that is considered toxic.	At elevated levels, it can cause damage to the respiratory system and aggravate respiratory infections.	The primary sources are coal and oil-fired electric utility boilers and transportation sources such as gasoline and diesel powered cars, trucks and buses.
LEAD	Toxic metal that can be absorbed into the body, accumulating in the blood, bones and soft tissue.	Central nervous system is highly susceptible. Also causes birth defects, high blood pressure, seizures and behavioral disorders.	Lead smelters and municipal waste combustors.
CARBON MONOXIDE	Carbon monoxide (CO) is a colorless, orderless and tasteless gas. However this gas is toxic.	Exposure to ambient levels exceeding the standards can effect the central nervous system as a result of reduced oxygen to your brain.	Carbon monoxide is primarily produced from motor vehicle emissions, mostly from poorly operating automobiles.
SULFUR DIOXIDE	Sulfur dioxide (S02) is a colorless, nonflammable gas. This gas has a pungent irritating order.	Sulfur dioxide primarily affects the upper respiratory system. It is usually removed by the nose, mouth and throat.	Combustion sources, mainly power plant burning fossil fuels (coal and oil) which contain sulfur.

III. AIR QUALITY ASSESSMENT

Meteorology



Palm Beach County can be classified as a semi-tropical region. The near permanent position of the subtropical high pressure area dominates our weather. It causes the prevailing easterly surface winds and supplies the warm, moist air necessary to produce the frequent evening rain showers and thunderstorms for which Southern Florida is known. The county's "rainy season" lasts from May to October and coincides with the hurricane season from June 1st to November 30th. This wet weather is primarily due to the east-to-west movement of tropical weather systems from the Caribbean Sea and Atlantic Ocean.

Meteorological parameters play a significant role in understanding the overall air pollution cycle. Wind direction and speed are of primary importance — especially within the first few hundred feet of the surface — in determining pollutant mixing and movement.

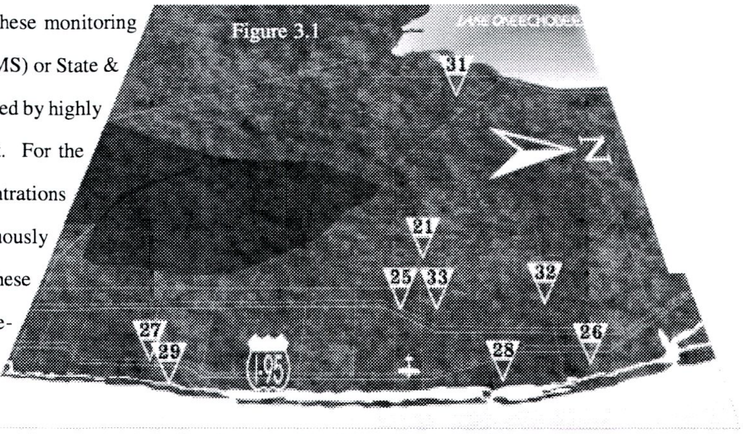
High pollution episodes generally occur in summer, from April to October, when the area is under the influence of high pressure systems. This can create conditions of light surface winds and increased air stagnation which reduces the mixing of pollutants in the lower atmosphere. Also, lower than normal rainfall during this period can cause dry, dusty conditions. Combined with intense summer sunlight, these conditions can cause higher than normal ozone levels.

Ambient Air Monitoring

One of the most important functions of the Health Department's air program is to conduct ambient air monitoring. The data obtained is used to assess the overall air quality in Palm Beach County, and determines whether this area is in compliance with federal and state ambient air quality standards. Ambient air monitoring data is also used to evaluate the effectiveness of control strategies and the permitting program.

Monitoring is conducted throughout the county as indicated in Figure**3.1**, which identifies the location of the monitoring sites. Most of these monitoring sites are designated as either National Air Monitoring Sites (NAMS) or State & Local Air Monitoring Sites (SLAMS). The monitoring is performed by highly trained and specialized staff utilizing state-of-the-art equipment. For the gaseous pollutants, sensitive instruments are used to detect concentrations in the sub parts per million range. These instruments run continuously except for servicing or maintenance. The data collected from these instruments is stored on data loggers and is routinely tele-communicated via modem to the central data acquisition computer located in West Palm Beach. After the air monitoring data has been reviewed and validated, it is tele-communicated to the Florida Department of Environmental Protection which then forwards it to the U.S. Environmental Protection Agency.

Figure 3.1



Ambient Air Monitoring Sites

21-Royal Palm Beach
25- West Plam Beach
26-Palm Beach Gardens
27 Delray Beach
28 -Riviera Beach
29-Delray Beach
31-Belle Glade
32-West Palm Beach
33-West Palm Beach

Table 3.2 1997 Ambient Air Monitoring Network Description

Pollutant	Monitor Location	NAAQS Compliance Status	Comment
Particulate Matter (PM_{10})	Sites 25, 26, 27 & 31	Meet all standards	PM_{10} concentrations are elevated under dry windy weather conditions
Ozone (O_3)	Sites 21 & 29	Meet all standards	Pollutant of most concern. Highest O_3 concentrations occur in the afternoon under hot stagnant weather conditions during the spring and summer months.
Nitrogen Dioxide (NO_2)	Sites 25 & 31	Meet all standards	Not a problem pollutant except it is involed in the reactions that form ozone.
Lead (Pb)	Site 32	Meet all standards	Single site located downwind of a municipal waste combustor. No Lead detected.
Carbon Monoxide (CO)	Sites 25 & 33	Meet all standards	Highest concentrations recorded on cold winter mornings coinciding with peak traffic.
Sulfur Dioxide (SO_2)	Site 28	Meet all standards	Monitoring located downwind of largest single source of SO_2. Not a problem Pollutant.

All ambient air monitoring is conducted in strict accordance with federal and state quality control limits and procedures. It is the responsibility of the Health Department's Quality Assurance Section to ensure that these requirements are being met. Table **3.2,** on the previous page, identifies the pollutants monitored and the associated locations along with information on whether compliance with the standards is being met.

In 1997, EPA adopted a new standard for ozone changing the averaging time from one hour to eight hours. The new standard is set at 0.08 ppm Table **3.3** indicates the 4th highest 8-hour average concentration for the year which the new ozone standard is based upon. Compliance with the standard is determined on the three year average of the fourth highest values.

Table 3.3
1997 Maximum 8 Hour Ozone Averages

Monitor Location	1st	2nd	3rd	4th*	5th
Delray Beach	.071	.070	.068	.065	.061
Royal Palm Beach	.071	.060	.059	.057	.054

*Compliance based on this value

New PM standards based on particles 2.5µm and smaller were also adopted in 1997 (see new developments). Monitoring for $PM_{2.5}$ will not begin until the fall of 1998, therefore, no data is available.

The PBCHD also prepares an annual Air Monitoring Technical Report which provides more detailed information. Copies of the report can be obtained by contacting the Health Department's Air Pollution Control Program at (561) 355-3070.

Air Quality Index

The Air Quality Index (AQI) is a uniform method of reporting daily air pollution concentrations and the associated health effects. The index is derived from the highest daily value of the five major pollutants monitored by the Health Department: particulate matter, ozone, sulfur dioxide, nitrogen dioxides, and carbon monoxide. In Palm Beach County, particulate matter and ozone have historically been the two predominant pollutants.

The AQI is based on the National Standard Scale spanning from 0-500 with a corresponding descriptive range.

1 - 50 -- GOOD
51 - 100 --------------------------- MODERATE
101 - 199 ----------------------- UNHEALTHY
200 - 299 -------------- VERY UNHEALTHY
300 - 500 --------------------------- HAZARDOUS

Air quality in Palm Beach County was in the GOOD range 88% of the time and in the MODERATE range less than 12%. MODERATE air quality episodes of particulate matter may occur throughout the year, usually the result of heavy construction activity and dry weather. Ozone levels approaching the MODERATE range usually occur during the afternoon hours in Spring, Summer, and Fall. Stagnant weather conditions may also contribute to MODERATE level episodes. Figure 3.4 shows the monthly maximum Air Quality Index for Palm Beach County in 1997. Figure 3.5 shows the number of GOOD, MODERATE and UNHEALTHY days for the last ten years. There were no days during the year that the AQI was in the "unhealthy" range.

The air program staff produces a recorded message for the morning and afternoon AQI on Monday through Friday, and an afternoon AQI on weekends and holidays.

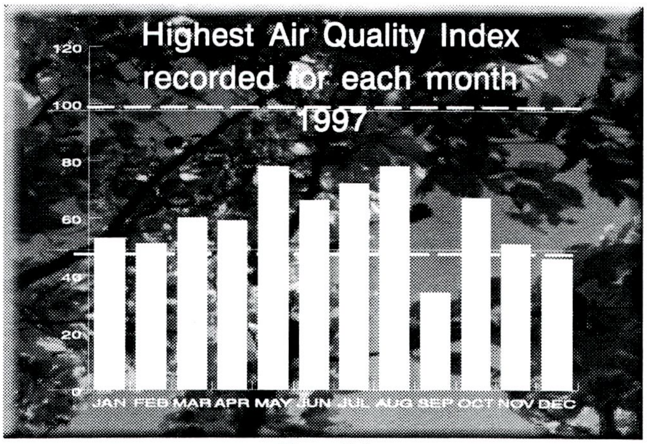


Figure 3.4

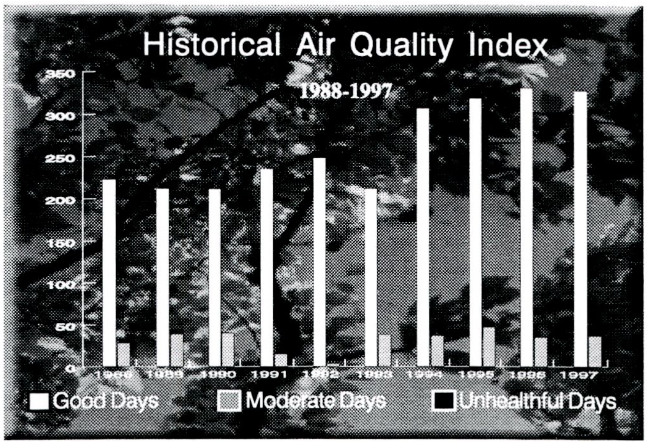


Figure 3.5

For the latest update of the Air Quality Index, call (561) 355-3962.

Pollen and Mold Spore Count

The Palm Beach County Health Department also provides a pollen and mold spore count. The pollen count is given a numerical value based on the amount and type of pollen collected in a 24-hour period. Data is reported in "grains of pollen or mold spores per cubic meter of sampled air." The pollen count is then compared to the following scale developed by the Aerobiology Committee of the American Academy of Allergy and Immunology:

0 - 20 ---------------------------- Low Count
21 - 200 -------------------- Moderate Count
Over 200 ---------------------- High Count

A numerical scale for mold spores was established by the Health Department based on several years of data:

0 - 6,000---------------------- Low Count
6001 - 12,000 ----------- Moderate Count
Over 12,000 ----------------- High Count

Figures 3.6 and 3.7 provide information on the maximum monthly pollen and mold spore counts for the year. The predominant contributors to the pollen count are grass and weed pollen (May to October) and tree pollen (December to April). The mold spore count is affected by rainfall, generally increasing immediately after a storm and decreasing during dry periods. Palm Beach County receives the greatest amount of rainfall from May through October.

The PBCHD updates the Air Quality Index and the Pollen/Mold Spore Count daily. For the latest update, call (561) 355-3962.

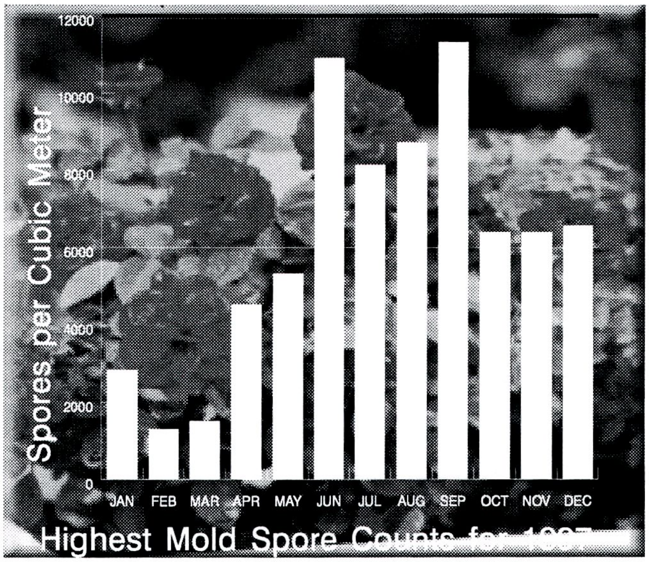


Figure 3.6

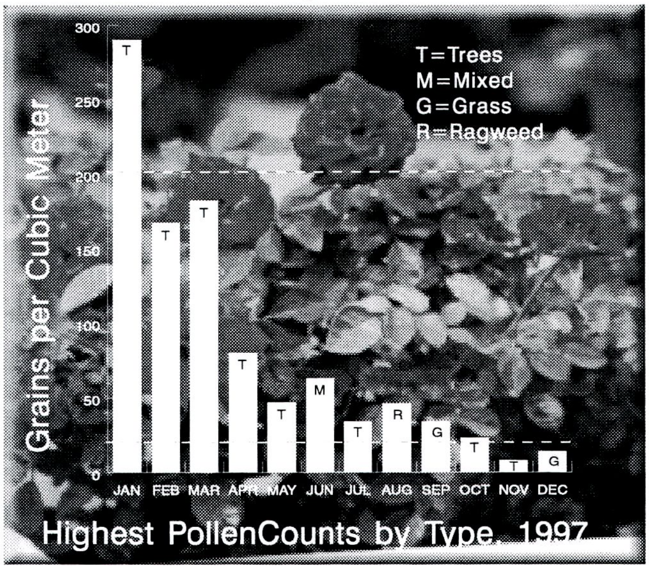


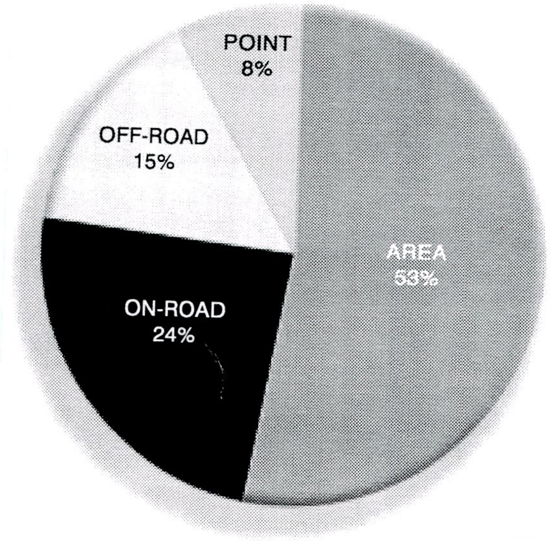
Figure 3.7

Traffic congestion, especially during the early morning and late afternoon peak rush hours, can cause elevated levels of air pollution.

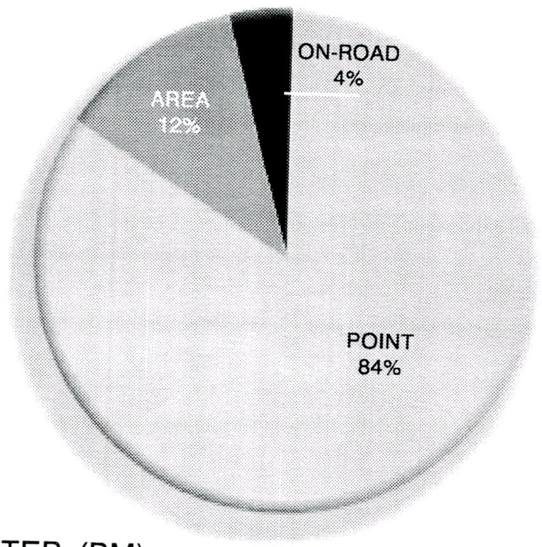
IV. SOURCES OF AIR POLLUTION

Air pollution is primarily caused by man's industrial and transportation activities. It is the undesired by-product of the technological advancement of our modern society. On the other hand, this modern society has also developed efficient methods to prevent and control atmospheric emissions of air pollutants. Emission contributions (depicted on the following page) can be classified by three main categories of air pollution: point sources, area sources, and mobile sources (on-road and off road).

VOLITILE ORGANIC COMPOUNDS (VOC)



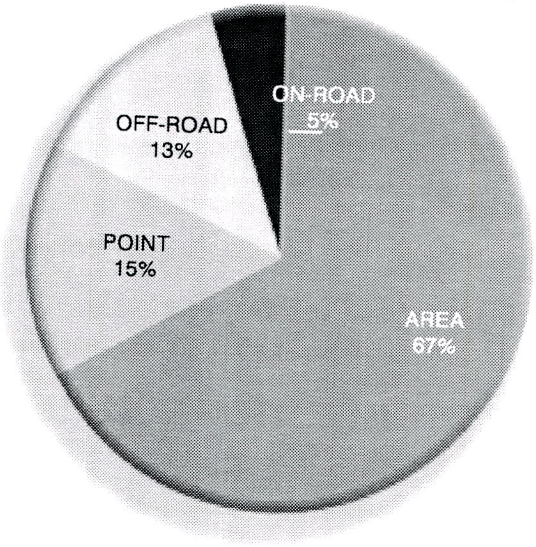
SULFUR OXIDES (SOx)



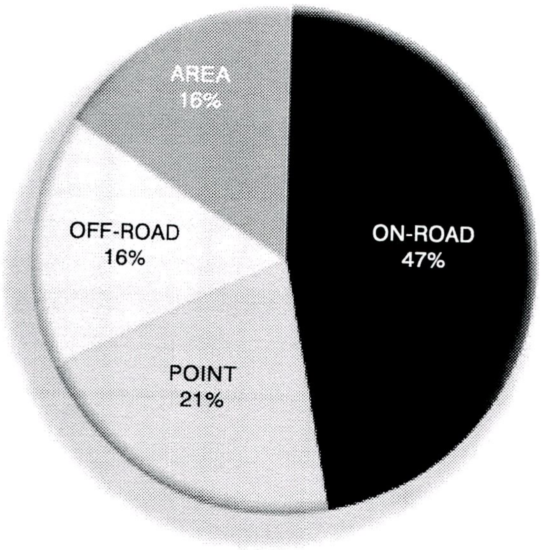
Sources of Air Pollution

- Off-Road Source Lawn & Garden, Farm Equipment,Construction
- Point Source Factories, etc.
- Area Source Small Dry Cleaners, etc.
- On-Road Source Cars, Trucks, etc.

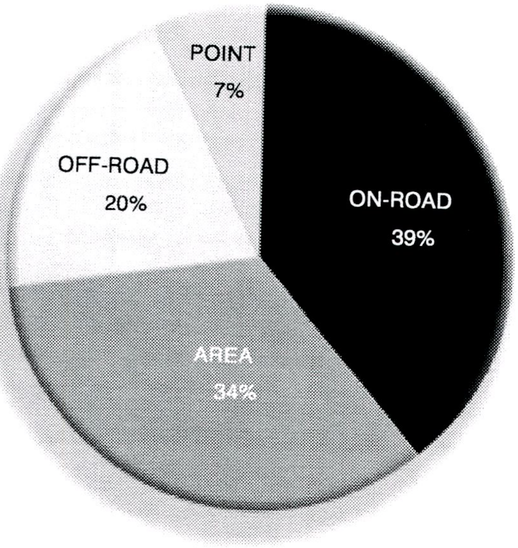
PARTICULATE MATTER (PM)



NITROGEN OXIDES (NOx)

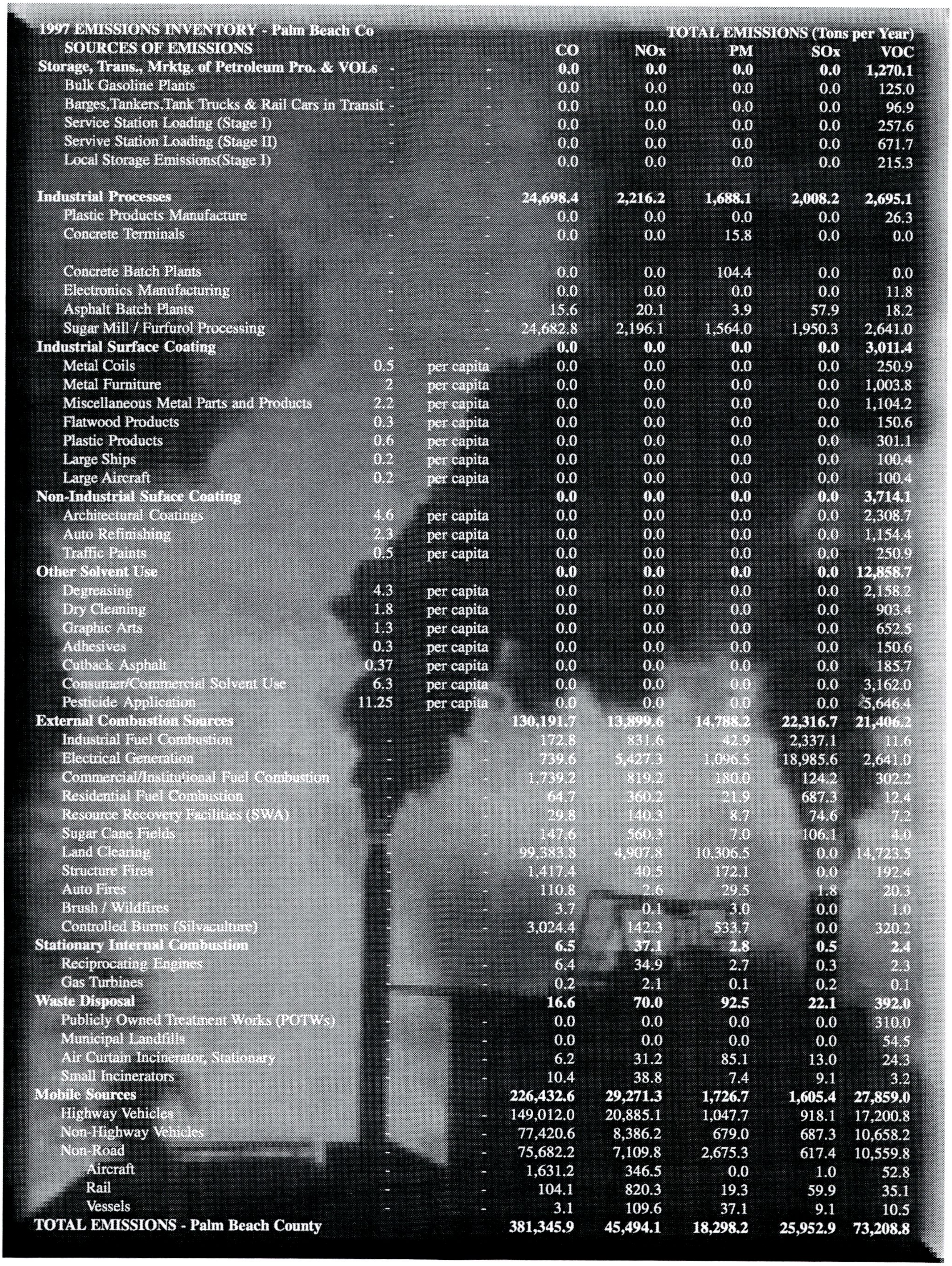


CARBON MONOXIDE (CO)

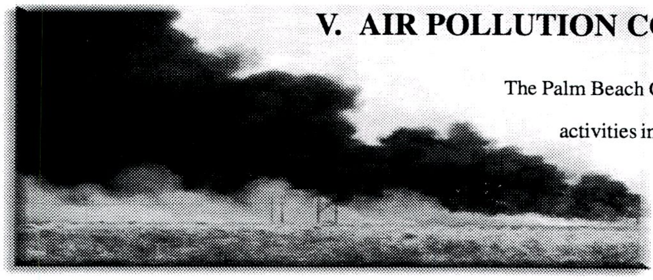


Emission Inventory

The emission inventory is a compilation of all pollutants in the county from the various sources of air pollution. It can be used as a very effective tool in designing and developing appropriate Air Pollution Control Strategies for a specific geographic area.



1997 EMISSIONS INVENTORY - Palm Beach Co			TOTAL EMISSIONS (Tons per Year)				
SOURCES OF EMISSIONS			**CO**	**NOx**	**PM**	**SOx**	**VOC**
Storage, Trans., Mrktg. of Petroleum Pro. & VOLs	-	-	**0.0**	**0.0**	**0.0**	**0.0**	**1,270.1**
Bulk Gasoline Plants	-	-	0.0	0.0	0.0	0.0	125.0
Barges,Tankers,Tank Trucks & Rail Cars in Transit	-	-	0.0	0.0	0.0	0.0	96.9
Service Station Loading (Stage I)	-	-	0.0	0.0	0.0	0.0	257.6
Servive Station Loading (Stage II)	-	-	0.0	0.0	0.0	0.0	671.7
Local Storage Emissions(Stage I)	-	-	0.0	0.0	0.0	0.0	215.3
Industrial Processes			**24,698.4**	**2,216.2**	**1,688.1**	**2,008.2**	**2,695.1**
Plastic Products Manufacture	-	-	0.0	0.0	0.0	0.0	26.3
Concrete Terminals	-	-	0.0	0.0	15.8	0.0	0.0
Concrete Batch Plants	-	-	0.0	0.0	104.4	0.0	0.0
Electronics Manufacturing	-	-	0.0	0.0	0.0	0.0	11.8
Asphalt Batch Plants	-	-	15.6	20.1	3.9	57.9	18.2
Sugar Mill / Furfurol Processing	-	-	24,682.8	2,196.1	1,564.0	1,950.3	2,641.0
Industrial Surface Coating	-	-	**0.0**	**0.0**	**0.0**	**0.0**	**3,011.4**
Metal Coils	0.5	per capita	0.0	0.0	0.0	0.0	250.9
Metal Furniture	2	per capita	0.0	0.0	0.0	0.0	1,003.8
Miscellaneous Metal Parts and Products	2.2	per capita	0.0	0.0	0.0	0.0	1,104.2
Flatwood Products	0.3	per capita	0.0	0.0	0.0	0.0	150.6
Plastic Products	0.6	per capita	0.0	0.0	0.0	0.0	301.1
Large Ships	0.2	per capita	0.0	0.0	0.0	0.0	100.4
Large Aircraft	0.2	per capita	0.0	0.0	0.0	0.0	100.4
Non-Industrial Suface Coating			**0.0**	**0.0**	**0.0**	**0.0**	**3,714.1**
Architectural Coatings	4.6	per capita	0.0	0.0	0.0	0.0	2,308.7
Auto Refinishing	2.3	per capita	0.0	0.0	0.0	0.0	1,154.4
Traffic Paints	0.5	per capita	0.0	0.0	0.0	0.0	250.9
Other Solvent Use			**0.0**	**0.0**	**0.0**	**0.0**	**12,858.7**
Degreasing	4.3	per capita	0.0	0.0	0.0	0.0	2,158.2
Dry Cleaning	1.8	per capita	0.0	0.0	0.0	0.0	903.4
Graphic Arts	1.3	per capita	0.0	0.0	0.0	0.0	652.5
Adhesives	0.3	per capita	0.0	0.0	0.0	0.0	150.6
Cutback Asphalt	0.37	per capita	0.0	0.0	0.0	0.0	185.7
Consumer/Commercial Solvent Use	6.3	per capita	0.0	0.0	0.0	0.0	3,162.0
Pesticide Application	11.25	per capita	0.0	0.0	0.0	0.0	5,646.4
External Combustion Sources			**130,191.7**	**13,899.6**	**14,788.2**	**22,316.7**	**21,406.2**
Industrial Fuel Combustion	-	-	172.8	831.6	42.9	2,337.1	11.6
Electrical Generation	-	-	739.6	5,427.3	1,096.5	18,985.6	2,641.0
Commercial/Institutional Fuel Combustion	-	-	1,739.2	819.2	180.0	124.2	302.2
Residential Fuel Combustion	-	-	64.7	360.2	21.9	687.3	12.4
Resource Recovery Facilities (SWA)	-	-	29.8	140.3	8.7	74.6	7.2
Sugar Cane Fields	-	-	147.6	560.3	7.0	106.1	4.0
Land Clearing	-	-	99,383.8	4,907.8	10,306.5	0.0	14,723.5
Structure Fires	-	-	1,417.4	40.5	172.1	0.0	192.4
Auto Fires	-	-	110.8	2.6	29.5	1.8	20.3
Brush / Wildfires	-	-	3.7	0.1	3.0	0.0	1.0
Controlled Burns (Silvaculture)	-	-	3,024.4	142.3	533.7	0.0	320.2
Stationary Internal Combustion			**6.5**	**37.1**	**2.8**	**0.5**	**2.4**
Reciprocating Engines	-	-	6.4	34.9	2.7	0.3	2.3
Gas Turbines	-	-	0.2	2.1	0.1	0.2	0.1
Waste Disposal			**16.6**	**70.0**	**92.5**	**22.1**	**392.0**
Publicly Owned Treatment Works (POTWs)	-	-	0.0	0.0	0.0	0.0	310.0
Municipal Landfills	-	-	0.0	0.0	0.0	0.0	54.5
Air Curtain Incinerator, Stationary	-	-	6.2	31.2	85.1	13.0	24.3
Small Incinerators	-	-	10.4	38.8	7.4	9.1	3.2
Mobile Sources			**226,432.6**	**29,271.3**	**1,726.7**	**1,605.4**	**27,859.0**
Highway Vehicles	-	-	149,012.0	20,885.1	1,047.7	918.1	17,200.8
Non-Highway Vehicles	-	-	77,420.6	8,386.2	679.0	687.3	10,658.2
Non-Road	-	-	75,682.2	7,109.8	2,675.3	617.4	10,559.8
Aircraft	-	-	1,631.2	346.5	0.0	1.0	52.8
Rail	-	-	104.1	820.3	19.3	59.9	35.1
Vessels	-	-	3.1	109.6	37.1	9.1	10.5
TOTAL EMISSIONS - Palm Beach County			**381,345.9**	**45,494.1**	**18,298.2**	**25,952.9**	**73,208.8**



V. AIR POLLUTION CONTROL ACTIVITIES

The Palm Beach County Health Department is responsible for a number of air pollution control activities including permit review, stationary source inspections, enforcement, the mobile source program, asbestos tracking, indoor air quality, air assessment complaint investigations, and open burn approvals. Each of these programs are described below.

Table 5.1 1997 ACTIVITIES SUMMARY

AIR POLLUTION PERMIT REVIEW	
Construction Permit	5
Minor Source Air Permits	22
Major Source Permits (Title V)	1
Exemptions	3
General Permits	5
STATIONARY SOURCE INSPECTIONS	
Major	48
Synthetic Minor	21
Minor	89
Area Sources with General Permits	197
ENFORCEMENT	
Notice of Violation	28
Notice to Correct	9
Environmental Control Hearing Board Case	20
Warning Notices	13
Consent Orders	6
Penalties Collected	$27,120
ASBESTOS	
Notifications	443
Demolitions	212
Inspections	231
MOBILE SOURCE PROGRAM	
Stage I Vapor Recovery Delivery Inspection	2
Stage II Plan Review	20
Stage I & 11 Certification/Inspection	121
Presentations	19
Investigations	7
Review of Development of Regional Impact (DRI)	11
MOTOR VEHICLE AIR CONDITIONING FACILITIES	361
Information Requests	222
COMPLAINTS	640
Odor	111
Smoke/Open Burning	31
Smoke/Other	23
Noise	6
Dust	100
Paint Overspray/Chemical Fume	13
Pesticide	8
Asbestos	21
Sugarcane Burning	9
Indoor Air Section	259
Other	11
Air Toxics	4
OPEN BURN APPROVALS FOR 1997	
Commercial	38
Residential	304

Permitting and Licensing

Many manufacturing and industrial processes generate air pollutants as unwanted by products. To protect the public health and the environment from these contaminants, the Florida Department of Environmental Protection (DEP) establishes state air pollution standards, as well as adopting the federal regulations, in the Florida Administrative Code. Sources of air pollution are required to obtain air pollution permits prior to construction, operation, and modification of equipment and processes that emit air pollutants. An air permit notifies the owner of all applicable requirements, specifies allowable pollutant emission rates, and identifies the methods used to determine compliance. A facility that operates beyond the limits specified by permit may be subject to civil and possibly criminal penalties.

DEP recognizes the Health Department as the approved local air pollution control program in Palm Beach County. Since January of 1994, DEP has delegated to the Health Department the authority to issue and deny permits for most sources of air pollution located in Palm Beach County. However, DEP retains the right to issue air permits for: electrical power plants, waste-to-energy plants, sugar mills, chemical manufacturing plants, county-owner facilities, Department of Health facilities, facilities covered by the agricultural exemption in the Palm Beach County Environmental Control Act, and other major facilities requiring a permit subject to the Prevention of Significant Deterioration.

Inspection and Compliance

Compliance by continuous emission monitoring is required for some sources in Palm Beach County. Pollutants such as Nitrogen Oxides, Sulfur Dioxide, Carbon Monoxide, Carbon Dioxide, and Particulate Matter are monitored continuously to demonstrate compliance with the applicable rules. The Health Department inspectors witness the performance tests and required accuracy audit checks of the monitoring equipment. Sources that are required to have continuous emission monitoring system are power plants, cogeneration plants, resource recovery facility , and medical waste incinerators.

Enforcement

A key element for successful compliance is a good enforcement program. Permitted air sources found to be out of compliance with permit conditions or state air regulations can be brought before the Palm Beach County Environmental Control Hearing Board. The Board has the ability to assess monetary penalties on sources, which usually "forces" them back into compliance.

Mobile Source Program

The Mobile Source Program (MSP) is responsible for implementing regulations designed to control emissions from cars, trains, planes, and boats — more commonly referred to as mobile sources. This is accomplished with regular inspections and aggressive enforcement by highly trained personnel. Gasoline service stations, automotive service and repair facilities, and gasoline delivery vessels are a few of the local sources subject to compliance activities. A comprehensive "Emissions Inventory" is compiled annually for mobile sources. Transportation planning is another priority area for the MSP. Single occupancy vehicles are discouraged by: ride sharing, high occupancy vehicle (HOV) lanes, staggered/flexible work hours, and construction of bike lanes. This helps by reducing the amount of vehicles on the road there by lowering the amount of car emissions.

Motor Vehicle Inspection Program (MVIP) *Future Uncertain*

The MVIP which began in 1991and administered by the Florida Department of Highway Safety And Motor Vehicles, in Florida's 6 Ozone non attainment areas, continues to provide air pollution emission reductions. Since its inception, the statewide vehicle failure rate has dropped from 16% down to 5% in 1997. The decrease in failure rates demonstrates the effectiveness of the program, which is basically forcing vehicle owners/operators to perform routine "preventive maintenance" (PM). The MVIP program is scheduled to expire in April, 1998. However there is a provision in the state's contract that could extend the program until the year 2000. The Health Department supports the MVIP by providing information to the general public on strategeis to reduce emissions from motor vehicles.

Protecting the Upper Level Ozone Layer

The release of chlorofluorocarbans, better known as CFCs, primarily R-12 (FREON) from automotive refrigerants can damage the earth's Ozone layer which protects us from harmful ultraviolet sunlight. One alternative refrigerant, R-134a, which is more Ozone friendly than R-12, is proving to be an adequate substitute.

During 1997, Health Department staff conducted **633** inspections of automotive air conditioning service establishments. More information about ozone depletion and global impacts can be obtained by calling EPA's Stratospheric Protection Hotline, toll free, at (800) 296-1996, between the hours of 10 a.m. and 4 p.m., EST.

Stage II Gasoline Vapor Recovery Program Update

Since 1992, the Stage II program efforts have focussed primarily on equipment certification and installation, and compliance inspections. While these activities continued in 1997, and an installation rate of 97% was achieved, more attention was directed to the Health Department's development of a "preventive maintenance" (PM) manual for station owners/operators. This was accomplished by producing a Self Inspection Handbook which was distributed to all gasoline dispensing facilities in the County. the handbook was well received by gas station operators, and is proving to be an effective tool for insuring that Stage II equipment is maintained properly to maximize operating profits.

Asbestos

Asbestos fiber-release exposure has been associated with the development of diseases such as asbestoses; lung cancer, and mesothelioma, a rare and usually fatal disease. The health risks associated with asbestos, have resulted in Federal Regulations, some of which are contained in the National Emission Standards for Hazardous Air Pollutants (NESHAP). The PBCHD routinely inspects public and commercial buildings to verify that there will be no threat of asbestos fiber release to the air during demolition and renovation activities.

Open Burning

In Palm Beach County, the open burning of vegetative debris is allowed for land clearing purposes. This activity is a one-time operation associated with clearing a property for the construction of a commercial business or private residence. To minimize the air pollution generated by this activity, the Health Department inspects all commercial and residential land clearing open burning projects. Any project creating a nuisance or health threat will be suspended and enforcement action pursued. In 1996, the Board of County Commissioners enacted new open burning requirements Palm Beach County. The purpose of these measurements is to ensure that open burning does not have a negative impact on human health and welfare and the surrounding environment.

Indoor Air Quality

People generally spend the majority of their time indoors. Pollutants can become trapped indoors and build up to levels greater than those outdoors. Sources of indoor air pollution may come from inside buildings or from the infiltration of polluted outdoor air. The Division of Environmental Health and Engineering conducts surveys and investigations of health related complaints in occupational and residential buildings on request. Advice and recommendations are made for the improvement of indoor air quality. For more information on Indoor Air Quality please contact the Health Department at (561) 355-3015.

Marine Engine Improvements

Marine pleasure crafts now are being manufactured to meet stricter air quality standards. The new line of engines produce less smoke, burn less fuel and run smoother then past engines. The boat companies must meet the Environmental Protection Agency's 2006 deadline for reducing emissions by 75%. All outboard manufacturer's will increase production of the cleaner burning and quieter four-stroke engines in their product lines of their low horsepower ranges.

POLLUTION PREVENTION (P2) ACTIVITIES 1997

Palm Beach County
P2
Coalition
An Industry and Agency Partnership for Pollution Prevention

The Health Department continues to have an active role in promoting Pollution Prevention (P2) activities as a means to achieve the Department's long term environmental protection goals. Since 1992, Health Department representatives served as "staff coordinators" to the P2 Coalition of Palm Beach County, a diverse group representing private industry, the public sector, academia, and government. P2 partners share a common goal of encouraging the voluntary implementation of strategies designed to prevent pollution at the source before it is ever created. These strategies include but are not limited to: alternative processes, new technologies, substitution of materials, and recycling at commercial, industrial, and manufacturing operations; incorporation of best management practices by the "regulated business community"; and conservation practices and efficiency enhancements by the general public.

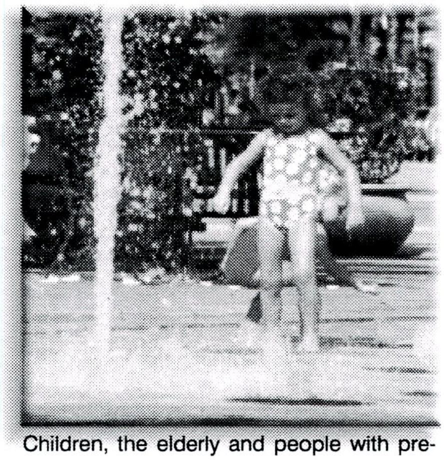
The Coalition also functions as a technical clearinghouse and provides electronic and hard copy information and resources on current P2 strategies. Information is also made available to businesses and the general public through seminars offered during convenient evening hours at centralized locations. In 1997, seminars were held for Aircraft Maintenance and Repair, and Agricultural Industries.

Over 100 people (mostly small growers, landscapers, and turf managers) attended the Agricultural Seminar. They heard experts speak on pesticide storage and inventory, integrated pest management, and local success stories. Vendors also provided attendees with hands-on exhibits featuring some of the newest technologies and agricultural equipment. All attendees received certificates of participation and continuing education units for use in renewing their Restricted Use Pesticide Applicators license. The Agricultural Seminar was also the pre-registration venue for the *CLEAN SWEEP* Program, will provide for free disposal of canceled, suspended, and unusable pesticides generated by Palm Beach County Agricultural Operators. *CLEAN SWEEP* was in part made possible with funding from the Pollution Recovery Trust Fund with penalties collected by the Health Department as a result environmental rule violations in the County. *CLEAN SWEEP,* jointly sponsored by the P2 Coalition, the Southeast Chapter of the Air and Waste Management Association, and the PBC Cooperative Extension Service, is scheduled to take place on April 4, 1998. The P2 Coalition is planning future seminars dealing with Energy Demand Management, Best Management Practices for Reduction of Hospital Wastes, and Pollution Prevention for the Pharmaceutical Industry, just to name a few.

The Health Department, through its satellite network, also hosted video teleconferences on Global Warming, the President's Million Solar Roofs Initiative, Medical Wastes Incineration, Sustainable Building Construction, Environmentally Friendly Cleaning Products for the Home, and Intelligent Transportation Systems. All conferences were taped and are available for free viewing, upon written request to either the Coalition or the Health Department.

For more information on the P2 Coalition of Palm Beach County, call Health Department staff at (561) 355-3070, or visit its worldwide web site at: ***(561) 355-3070***
or visit its worldwide web site at:
http://www.CES.FAU.EDU/~Pollute.

VI. NEW DEVELOPMENTS



Children, the elderly and people with pre-exsisting resporatory ailments are especially suseptable and at risk to ozone exposure.

New NAAQS for Ozone and Particulate Matter

An important provision of the CAA is a requirement for EPA to conduct a periodic review of new information regarding the health effects of criteria air pollutants. From this information, EPA compiles a report and submits it to an independent advisory committee to assess whether current NAAQS are adequate to protect public health and welfare. Since the late 1980's, there was a growing body of evidence that the standards for ozone and particulate matter were not protective of public health and welfare, and therefore, should be revised. This led to the adoption of new standards in July of 1997 for these two pollutants as described below. It should be noted, though, that the standards were adopted under much controversy. A major concern was that implementing the new standards would prove to be expensive and adversely impact economic development.

Ozone: The ozone standard had been established at 0.12 ppm, based on an hourly average. However, new scientific evidence indicated that health effects occur at lower levels, under exposure times longer than one hour are of concern. Included in this evidence was an association between ozone exposure and increased hospital visits for respiratory ailments, especially asthma. Ozone exposure can effect breathing by reducing lung function and causing chest pains. Children in particular are at risk because they are likely to be engaged in outdoor activities, especially in the summer when ozone concentrations are higher. Also at risk are adults who are moderately active outdoors, such as construction workers, and individuals with pre-existing respiratory diseases such as asthma.

The new NAAQS for ozone was set at 0.8 ppm for an eight hour average. Compliance with the 8 hour standard is based on the fourth highest annual ozone value, averaged over a three consecutive year period. Based on current data, it is expected that PBC will remain in compliance. However, as with the one hour standard, attainment will be based on monitoring from the Florida southeast airshed which includes Dade and Broward counties which typically have higher ozone concentrations. It is anticipated that the initial compliance designation will be made by EPA in the year 2,000, using the 1997-1999 data.

Particulate Matter (PM): The PM standards (annual and 24 hour) had been based only on particles with average diameters of 10μm and less. Recent health studies have indicated, that fine particles (with diameters of 2.5μm or less) are more of a health concern as they have a greater ability to penetrate deeply into the lungs. Studies have shown an association with exposure to fine particulate matter (PM2.5) and increased hospital admissions and premature death. The elderly and individuals with pre-existing cardiopulmonary diseases (such as asthma) are particularly at risk. Typical sources of course particles (2.5-10 μm) include windblown dust and dust kicked up from vehicular traffic. Sources of PM2.5, on the other hand, are generally attributed to emissions associated with combustion processes such as power plants, motor vehicles, and open burning. PM2.5 can also be formed in the atmosphere from gaseous pollutants emitted from combustion sources that undergo chemical transformation.

In revising the standards, EPA retained the existing PM10 standards, but added new standards for PM2.5. The new NAAQS standards for PM2.5 are set at 15mm/m3 for an annual average concentration, and 65 mm/m3 for a 24-hour concentration. With the new standards, EPA had to adopt new reference methods for sampling PM2.5. Therefore, there is no data available using the reference methods to assess compliance with the new standards. The projected PM2.5 values will more closely approach the standards (especially the annual) compared to the PM10 standards. EPA will provide funding in 1998 to establish a PM2.5 monitoring network in PBC.

Title V Update

Title V of the Clean Air Act Amendments of 1990 established a federal operating permit program for major sources of air pollution. EPA has delegated interim approval to the Florida Department of Environmental Protection (DEP) to administer the Title V operating permit program for major sources located in Florida. In turn, the DEP has delegated this permitting authority to the Health Department for several of the major sources located in Palm Beach County. In May of 1997, the Health Department issued it's first, final Title V operating permit and only the second Title V permit issued in the state.

The initial Title V operating permits were to be issued by October of 1998. Recently, DEP has requested a two year extension of time in which to issue these initial permits. However, the state statutes still required DEP to issue all Title V operation permits for electrical utilities subject to the Acid Rain requirements before the end of 1997. (Acid Ran refers to the emission of large amounts of oxides of nitrogen and sulfur dioxide.) DEP's Title V Permitting Section issued nearly 40 draft Title V operating permits to meet this tight deadline. However, EPA formally objected to several electrical utility permits stating that there was insufficient "periodic monitoring" to ensure continual compliance with all of the standards. DEP maintained that the Florida Statutes precluded it from establishing more frequent monitoring than required by state rule. The conflict was worked out by agreement in meeting between EPA, DEP, and the utility company. Unfortunately, this has set a precedent in which periodic monitoring issues may have to be worked our on a permit-by-permit basis with each facility.

Special Air Quality Study

In 1996, the PBCHD collaborated with Florida International University (FIU) to conduct a special one year study to evaluate size segregated characteristics of PM in PBC. For this one year study, special equipment was used to separate PM samples into several size categories from which the amount of fine and coarse PM could be determined. Samplers were set up in an urban area (Delray Beach) and a rural area (Belle Glade). In addition to mass concentrations, FIU further analyzed samples collected in the months of January and May of 1997 to detemine elemental and organic compositions of the different size categories. FIU prepared a final report on the study which provided some very valuable information.

Air Toxics

The Title III of the Clean Air Act Amendment of 1990 mandates control of 189 Hazardous Air Pollutants (HAP) from specific sources. The EPA has passed several National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations for several source categories in last few years. A major source that falls under such NESHAP regulations has to comply with Maximum Achievable Control Technology and reduce 90-95% of emissions of HAPs. Some of the NESHAP Regulations also contains requirement for emission control and record keeping for a "smaller" area source which collectively can have a significant impact to the environment. The FDEP has adopted these NESHAP Regulation and has passed several regulations to control such sources in the State of Florida. Because of these regulations, 149 dry-cleaning facilities that utilize perchloroethylene, 10 degreasing facilities that utilize halogenated solvents, and 7 chromium electroplating facilities are being regulated as area sources in the County. More sources are likely to be considered in the future as new regulations are promulgated.

GLOBAL WARMING AND CLIMATE CHANGE UPDATE

These days, severe weather seems to be a normal occurrence. Everyone has become familiar with newspaper headlines such as: "El Nino driven torrential rains triggering mud slides in California, flooding rivers devastate the Mid West, deadly heat wave responsible for loss of life in Chicago, and killer tornadoes destroy hundreds of homes, in Florida of all places." Are these recent catastrophes a result of modern society's urbanization in vulnerable places, or is there a direct connection to scientific data that suggests the Earth is warming at an alarming pace, causing climate changes that will negatively effect future generations?

In 1997, the Health Department began to seriously address the Global Warming issue by attending a conference in Atlanta, Georgia sponsored by the Environmental Protection Agency (EPA) entitled ***Global Climate Change: Impacts for the Southeast.*** Several staff also attended President Clinton's live video telecast from the *White House Roundtable on Climate Change* in July of 1997. Evidence presented by leading experts at both events suggests that greenhouse gases like Carbon Dioxide (CO2) and Nitrous Oxides (NOX), which are emitted primarily from fossil fuel combustion, are trapping in radiation at the Earth's surface causing an increase in global temperature. The eleven warmest years this century have all occurred since 1980, with 1995 the warmest on record. Closer to home, the impacts to Florida could include: increased precipitation and severe storms; changes in the growing season for crops; floods and contamination of fresh water supplies from salt water intrusion due to rises in sea level; expansion of the ranges for disease carrying insects; and worsening health effects from exacerbation of air pollution problems, especially ground level ozone.

In response to this potential threat, the Health Department has become more involved with initiatives to reduce greenhouse gas emissions, mainly through programs which stress conservation of natural resources, sustainable development, and energy demand management. A good example is the *"Green Lights Program"* (GLP) which the Health Department encouraged the County to participate in. The program involves the replacement of old inefficient lighting and components in County owned facilities with energy efficient lighting. The end result is a reduction in air pollutant emissions due to less electrical usage from lower fossil fuel consumption by power plants. The County also realizes costs savings from lower utility bills. Other stratigies include: clean fuel vehicles, energy efficient home appliances and office equipment, solar power, tree planting for shaded communities, and use of mass transit systems to reduce automobile use and gasoline consumption.

Rapid population growth, continued industrialization, and increased energy consumption, especially by developing countries will significantly contribute to Global Warming. Investing now to protect the Earth's climate will hopefully enable future generations to live in a world that is not dramatically altered by modern man's activities. In December, 1997, a Climate Change Conference was held in Kyoto, Japan where 159 nations agreed to establish binding limits on greenhouse gas emissions. The *"Kyoto Protocol"* marks the first steps in the global effort to stabilize greenhouse gas emissions at "safe levels." Vice President Al Gore was a major player at the Kyoto Protocol.

YOU CAN MAKE A DIFFERENCE ! Reduce energy and lesson Global Warming impacts by:

- Insulating your home
- Painting your roof with reflective white paint
- Upgrading old inefficient appliances
- Sealing windows and doors
- Recycling at home
- Installing a low flow water shower
- Installing energy efficient "Green Lights"
- Utilizing mass transit, or ride a bike instead of driving
- Supporting legislation for research of new energy technologies

VII. Abbreviations

AQI	Air Quality Index
AFV's	Alternative Fueled Vehicles
CAAA	Clean Air Act Amendments (of 1990, Federal law)
CFC's	Chloroflurocarbons
CNG	Compressed Natural Gas
CO	Carbon Monoxide
DEP	Department of Environmental Protection
DRI	Development of Regional Impact
EI	Emissions Inventory
EPA	Environmental Protection Agency
GACT	Generally Available Control Technology
HAP's	Hazardous Air Pollutants
MACT	Maximum Achievable Control Technology
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NAMS	National Ambient Air Monitoring Stations
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO	Nitric Oxide
NOX	Nitrogen Oxides
NO2	Nitrogen Dioxide
O3	Ozone
P2	Pollution Prevention
PBCHD	Palm Beach County Health Department
PCE	Perchloroethylene
PM	Particulate Matter
PIP	Public Information Program
PPM	Parts Per Million, by Volume
SLAMS	State and Local Air Monitoring Stations
SOA	Specific Operating Agreement
SO2	Sulfur Dioxide
TCCR	Tri County Commuter Rail
TCM	Transportation Control Measures
TCRPC	Treasure Coast Regional Planning Council
TOD	Transit Oriented Design
µg/m3	Micrograms Per Cubic Meter
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

This Progress Report is printed annually by the Air Pollution Section of the Palm Beach County Health Department. It is designed to provide information to local citizens and government officials, about the local air pollution control program and the air quality in Palm Beach County.

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Contact Michael Cantanzaro @ (561) 355-3070 ext. 1172.

I would like to thank everyone who helped with this year's Annual Report.